

**Amendment and Response**

Applicant: Josef Böck et al.

Serial No.: 10/521,106

Filed: September 13, 2005

Docket No.: I435.121.101/12307US

Title: BIPOLAR TRANSISTOR

**BEST AVAILABLE COPY****REMARKS**

The following remarks are made in response to the Non-Final Office Action mailed March 16, 2006. Claims 10-11, 17-23 and 30-32 have been cancelled. Claims 9-32 were rejected. Claims 9, 12-16, and 24-29 remain pending in the application and are presented for reconsideration and allowance.

**Claim Rejections under 35 U.S.C. § 103**

The Examiner rejected claims 9-11, 16, 17-19, 23, 24, and 29 under 35 U.S.C. § 103(a) as being unpatentable over the Higuchi U.S. Patent No. 5,407,857.

The Examiner rejected claims 9-13, 15-21, 23-26, and 28-32 under 35 U.S.C. § 103(a) as being unpatentable over the Higuchi U.S. Patent No. 5,407,857 in view of the Kalnitsky et al. U.S. Patent No. 6,593,640.

The Examiner rejected claims 14, 22, and 27 under 35 U.S.C. § 103(a) as being unpatentable over the Higuchi U.S. Patent No. 5,407,857 in view of the Kalnitsky et al. U.S. Patent No. 6,593,640, and further in view of the Oda et al. U.S. Patent No. 6,521,974.

Amended claim 9 includes a bipolar transistor including an emitter area, a base area, and a collector area. The emitter area can be contacted electrically via an emitter electrode. The base area can be contacted electrically via a base electrode. The collector area can be contacted electrically via a collector electrode. At least one electrode of the emitter electrode, base electrode and collector electrode is a polysilicon layer, into which doping is inserted and impurity atoms are inserted. The inserting of the impurity atoms causes a high density of vacancies in the polysilicon layer in the range of about  $10^{19}$  to  $10^{21}$  cm<sup>-3</sup>. The impurity atoms are C, P or Ar atoms. This is not shown or suggested in the art of record.

Specifically, the Higuchi U.S. Patent No. 5,407,857 only discloses to dispose a polysilicon film between the base region and the base polysilicon electrode (see, column 2, last paragraph – column 3, first paragraph). The polysilicon film is supposed to function as a buffering resistor of which the resistance can be adjusted as desired by varying the impurity concentration thereof (see, column 3, lines 28-32). Consequently, the polysilicon film of the

BEST AVAILABLE COPY

**Amendment and Response**

Applicant: Josef Böck et al.

Serial No.: 10/521,106

Filed: September 13, 2005

Docket No.: 1435.121.101/12307US

Title: BIPOLAR TRANSISTOR

Higuchi reference is not even part of any electrode of the bipolar transistor, but it is provided separately therefrom.

Furthermore, the Higuchi reference only teaches that the polysilicon film may be doped with a n-type impurity such as a phosphorus (see column 4, lines 47-50). As such, the Higuchi reference only discloses a doping of the polysilicon film. There is, however, no impurity in addition to the dopant, and in particular, there is nothing specified in the particular range of concentration as defined in amended claim 9. Consequently, claim 9 is not taught or suggested by the Higuchi reference.

Similarly, the Kalnitsky et al., U.S. Patent No. 6,593,640 does not teach or suggest the bipolar transistor of amended claim 9. The Kalnitsky reference discloses a bipolar transistor having a base 16 contacted by a polysilicon layer 20 (see column 2, last paragraph). According to column 3, lines 12-28 of the Kalnitsky reference, the polysilicon layer 20 includes a conventional dopant, such as boron, in a conventional concentration. In addition, the polysilicon layer 20 further includes an implanted substance such as carbon or germanium. According to column 5, first paragraph, the carbon concentration in the polysilicon layer is in the region of about 1%.

As such, the Kalnitsky reference, at column 5, first paragraph, only indicates that the carbon concentration in the polysilicon layer may be in the region of about 1%. It is absolutely unclear, however, to which particular concentration the value of 1% refers. It may well be that the corresponding passage of the Kalnitsky reference means 1% of the dopant concentration. In the Office Action, the Examiner assumes that this percentage refers to the atomic density of silicon, which is allegedly about  $5 \times 10^{22} \text{ cm}^{-3}$ . There is no support or suggestion in the Kalnitsky reference, or in any of the art of record for this blanket assumption. Consequently, the disclosure of the Kalnitsky reference in this respect is absolutely obscure.

Finally, Oda et al., U.S. Patent No. 6,521,974 does not teach or suggest the bipolar transistor of amended claim 9. Specifically, the Oda reference discloses a bipolar transistor without any reference to any impurities.

BEST AVAILABLE COPY

**Amendment and Response**

Applicant: Josef Böck et al.

Serial No.: 10/521,106

Filed: September 13, 2005

Docket No.: I435.121.101/12307US

Title: BIPOLAR TRANSISTOR

Since claims 12-16 depend from claim 9, which is not believed to be in allowable form, they too are in condition for allowance. Furthermore, for the same reasons detailed above, claim 24, and its dependant claims 25-29, are also in condition for allowance.

Therefore, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 103 rejection to claims 9, 12-16, and 24-29, and request allowance of these claims.

**CONCLUSION**

In view of the above, Applicant respectfully submits that pending claims 9, 12-16, and 24-29 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 9, 12-16, and 24-29 are respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

**BEST AVAILABLE COPY**

**Amendment and Response**

Applicant: Josef Böck et al.

Serial No.: 10/521,106

Filed: September 13, 2005

Docket No.: 1435.121.101/12307US

Title: BIPOLAR TRANSISTOR

Any inquiry regarding this Amendment and Response should be directed to Paul P. Kempf at Telephone No. (612) 767-2502, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

**Dicke, Billig & Czaja**  
Fifth Street Towers, Suite 2250  
100 South Fifth Street  
Minneapolis, MN 55402

Respectfully submitted,

Josef Böck et al.,

By their attorneys,

**DICKE, BILLIG & CZAJA, PLLC**

Fifth Street Towers, Suite 2250

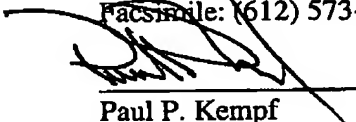
100 South Fifth Street

Minneapolis, MN 55402

Telephone: (612) 767-2502

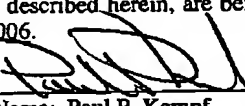
Facsimile: (612) 573-2005

Date: June 15, 2006  
PPK:cmj

  
Paul P. Kempf  
Reg. No. 39,727

**CERTIFICATE UNDER 37 C.F.R. 1.8:**

The undersigned hereby certifies that this paper or papers, as described herein, are being transmitted via facsimile to Facsimile No. (571) 273-8300 on this 15<sup>th</sup> day of June, 2006.

By:   
Name: Paul P. Kempf